THE RADICAL MASTOID OPERATION FOR CHRONIC SUPPURATION OF THE MIDDLE EAR, WITH A REPORT OF TWO CASES.*

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[The 2 cases referred to here, together with 7 others, were presented at the 35th annual meeting of the State Society, and will be published subsequently.—ED.]

IN THE first place, it is very important to understand just what is done in this operation; the literature is somewhat confusing, so I will begin with Professor Schwartze, of Halle, A. S., who was the first to operate for chronic suppurative otitis media.

He established communication between the diseased process in the mastoid and the tympanic cavity so as to allow the parts to be thoroughly cleansed. This operation was followed for a long time, and is done by some surgeons to-day; however, it has been found that quite a number of the patients do not recover entirely, as the disease was located in the antrum or the walls of the tympanic cavity. During the last 12 or 14 years this operation has been considerably modified, and it is said that Professor Küster was the first to do this in a more practical way. He removed the posterior wall of the osseous meatus, so that the accessory cavities would be in communication, and could be better treated. This was a very important step in the operation, but at the same time it was difficult, and sometimes impossible, to effect an entire cure.

Stacke and Zaufal have the credit of perfecting this work. However, they proceed in different ways. The typical Stacke operation has a place by itself, as very useful when the lateral sinus encroaches so much on the posterior osseous canal that you cannot enter in the usual way. In his operation he opens the attic and antrum, working from within outwards, removing all of these parts. In seeing this operation, or doing it yourself for the first time, you are very much taken with the procedure; but the more you use it the more you discover the underlying dangers associated with it. The principal one is that you are working in a small blind cavity, and very liable to do harm. Of course you can follow the diseased process just as well and remove all the mastoid cells, if necessary; but the greater number of ear surgeons prefer Zaufal's modification, which is a removal of the posterior superior part of the osseous canal, with the anterior part of the mastoid, then opening the antrum and attic by removal of the outer wall. This is the so-called radical mastoid operation, or the "total aufmeiszlung" of the Germans. The indications for this operation are founded on sound surgical principals, and deserve the most careful consideration from all. I do not believe there is a physician or surgeon here who will not agree with me if he looks at the case from a surgical standpoint. We divide the indications for operation into objective and subjective symptoms; the objective symptoms are further divided:

1. Caries of the temporal bone. 2. Extensive growth of polypi which have a tendency to recur after removal. They may also be associated with pus retention. 3. Fistulous openings of the mastoid process, or the osseous meatus. 4. Cholesteatoma of the middle ear that cannot be cured by treatment, or by the extraction of the hammer and the incus, which I do not recommend. 5. Cases of obstinate antrum suppuration, containing small masses of epidermis. 6. Membranous strictures of the external meatus, or those due to hyperostoses, because of the danger of pus retention. 7. Paresis, or paralysis of the facial nerve occurring in the course of chronic suppuration of the middle ear, when the aural examination points to caries of the temporal bone, or if the paralysis develops with symptoms of intercurrent acute middle ear suppuration. 8. Acute mastoiditis with the formation of a mastoid abscess occurring during the course of chronic middle ear suppuration. 9. Chronic middle ear suppuration with symptoms of beginning tuberculosis. This is a very important branch of the subject, a great deal can be said for and against operative interference. From the clinical work I have seen and done, I am firmly convinced that primary tuberculosis of the middle ear or of the temporal bone is extremely rare. I acknowledge the possibility, but should it be present, the sooner it is operated upon the greater the chance of recovery. Of course there is practically no chance of recovery without operation, death from general tuberculosis, or from the various cerebral complications being sure to follow. Many of these patients do not get well because the operation has been put off until such complications develop as cannot be thoroughly eradicated.

I make the following quotations: Brieger, in a recent publication on tuberculosis of the middle ear, reported his findings in 241 patients who had died of tuberculosis. Of this number, 37 showed chronic inflammatory process of the ear. Eighteen times the tubercular nature of this inflammation could be demonstrated. In 7 cases the tuberculosis had attacked the labyrinth. The perforation from the middle ear took place 3 times through the round window, twice through the oval window, and twice through both. Garbini and Ballestri, *Italian Archives of Otology*, Vol. 9, p. 181: In the report of 40 cases of chronic suppuration of the middle ear accompanied by caries, the tubercular process was demonstrated in 4 by means of bacteriological examination and experiments upon animals. Körner, Hauel, Grünert, Barnick, Piffl, Haike, Bar, each report one case of tuberculosis of the ear and temporal bone. In each and every case the appearance and the clinical history pointed to tuberculosis, which was confirmed by microscopical examination. In a recent publication, Grünert makes the following statement in regard to tuberculosis: "There is as yet no agreement among specialists as to the answer to the elementary questions, how often suppurations of the middle ear are of a tubercular nature, and how often a suppurating middle ear is to be regarded only as a port of entrance of a secondary tubercular affection." In regard to the first question, authors are directly opposed to each other. The general surgeons frequently maintain that chronic suppuration of the middle ear is tubercular in the majority of cases. On the other hand the influence of tuberculosis in causing suppuration of the middle ear is minimized by others. The investigations hitherto carried out with this point in view, have not been entirely convincing. It is due to the fact that usually the investigator has confined himself to the bacteriological examination of the aural discharge, a negative result of which is no proof that it is not tuberculosis.

10. Fetid middle ear suppuration that resists treatment, the discharge remaining fetid, which is indicative of necrosis or of cholesteatoma.

11. Chronic middle ear suppuration that resists *all* forms of treatment. In this particular, aural surgeons are divided; but I can truthfully say that the most progressive men are in favor of operation. I mean by that that these cases should be under rational systematic treatment from 1 to 4 months. If you cannot cure your patient in this length of time, it is reasonable to suppose that you are dealing with an incurable affection. I do not believe one of you would advise the non-interference of a chronic suppuration of any other part of the body; why should you make a difference when it is associated with the ear? The anatomical relations are such that by non-interference you are *more* liable to have *more* serious consequences than from a similar discharge anywhere else.

I quote from memory; if not right, I stand to be corrected. A German author says that every fifth person has some ear defect. This defect may be insignificant, and give the patient no trouble at all. Probably 50% of this number consult physicians. Of this 50%, every

* Read before the San Francisco County Medical Society, Nov., 1905.

tenth* patient has a chronic suppurative otitis media. At this rate, San Francisco, with a population of 500,000, has 5,000 cases of chronic suppurative otitis media. Of this number, probably 1,000 are under treatment. I am confident that quite a percentage of these untreated, and possibly treated, patients are dying from cerebral complications, such as extradural abscess, brain abscess, meningitis, perisinous abscess and sinous thrombosis, which are very hard at times for the general practitioner to recognize, because he has usually considered these chronic discharges as more or less insignificant.

Statistics in relation to intercranial complications.—Pitt, in performing 9,000 autopsies, found that death was due to chronic suppuration of the middle ear in 57; Barker, in 8,028 autopsies, 45 cases; Gruber, in 40,073 autopsies in the Vienna General Hospital, 232 cases. This makes a total of 57,101 autopsies, and 334 deaths from chronic suppuration, which is approximately one death in 170 cases. Estimating San Francisco, with a population of 500,000, at a death rate of 14 per thousand, we find that we have 7,000 deaths, which would show that we have 41 persons dying from cerebral complications each year due to chronic suppuration of the middle ear. Politzer says, in relation to these statistics, that the number must be much greater if we bear in mind that only a small percentage of the chronic middle ear suppurations are taken to a hospital; and he says that these figures should be doubled. This would indicate that the profession at large has not altogether recognized the importance of chronic suppuration of the middle ear.

There is not a field in surgery that demands more careful consideration. If you operate as I advise, you will practically eliminate all the cerebral complications and others too numerous to mention. In operating for cerebral complications, you have a mortality of something like 50%. This will be reduced to a minimum. The patients do not all recover from the discharge following the radical operation; but I can truthfully say that the danger of dying from cerebral complications is practically nil. I arrive at these conclusions from studying from 600 to 700 operations which I have either seen, assisted in or performed myself. The mortality following this operation, after the cerebral complications have been eliminated, is less than one-half of one per cent, and this is due to lack of proper aseptic dressing. Macewen's tables show that 80% or 90% of the cases of chronic brain surgery are due to chronic suppuration of the middle ear.

12. a, b and c, when associated with some other symptoms.

(a) Remittent or continuous fever, associated with great rise of temperature after a chill or a rigor; the characteristic septic fever with rapid variations of temperature.

(b) Vomiting, when associated with some other cerebral symptoms.

(c) The condition of the fundus oculi, as dilatation of blood vessels, retinitis optica, papilitis and choked disc, found in 50% of the otitic complications.

Subjective Symptoms.—These are never taken alone, but must be associated with other subjective or objective symptoms.

1. Continuous or recurring pain in the ear or mastoid process.

2. Persistent headache on the corresponding side. Temporary or continuous attacks of dizziness.

3. The first signs of cerebral complication, such as severe headache, nausea and vomiting.

I have neglected to speak of the nose and the naso-pharynx in relation to chronic suppuration of the middle ear. Briefly, the nose and the naso-pharynx must be put in an absolutely healthy condition before any form of treatment for chronic suppuration of the middle ear is begun.

Statistics in relation to the function of hearing following the radical operation.—Dozent Hammerschlag of the Politzer clinic collected all the reports of operations from 1895 to 1897, showing by these that in the majority there was no essential difference in the hearing. A small percentage showed an improvement. About the same number did not hear as well. Wagner's report, 1893, is about the same as Hammerschlag's. Stacke reports 100 cases; hearing improved 31 times; made worse 6 times, and in about half it remained unaltered. Grünert improved the hearing in 55%, changed for the worse in 6%, unchanged 39%. This increase or diminution in hearing after the operation is dependent on the amount of cicatricial tissue that binds the stapes. Körner says that when the labyrinth is not affected the hearing will always be improved.

Statistics in relation to complete recovery.—Complete recovery depends to a great extent on the parts involved, to the extent of the disease, and to the development of intercranial complications. The prognosis is more favorable in cases of caries of the attic or antrum and mastoid process; fistulous openings of the posterior wall; membranous strictures of the external meatus, etc. The prognosis is not so favorable in cholesteatoma; extensive caries of the labyrinth; tuberculosis of the temporal bone; intercranial complications. Duration of treatment varies from 3 to 9 months.

Stacke reports 100 cases; 94 cured, 3 died from cerebral complications, 2 remained away, 1 dismissed not cured. Grünert reports 200; 99 healed, 37 dry but requiring periodical attention, 34 not healed, 10 died from cerebral complications, 1 from meningitis during the after-treatment, 19 not reported. Trautmann cured 70%, Schwartze 74%, Politzer 85%. Professor Grünert has just published the statistics for his last year's operative work. He had 93 patients operated upon; 53 cured, 7 deaths due to cranial complications, 4 temporarily benefited, 4 not benefited, 1 disappeared, and 22 remaining under treatment. The reason so many remain under treatment is that the year's work ended April 1, 1904. The publication was made in July. When sufficient time elapses, I believe this will show the best results published regarding complete recovery. One of the deaths was due to carcinoma. The average duration of the cures was 4½ months.

*By investigation of some 30,000 cases of diseases of the ear, I find it to be one in every sixth patient suffering from an ear affection.

CLINICAL FINDINGS USUALLY OVERLOOKED IN MUCOMEMBRANOUS ENTEROCOLITIS.*

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ONE of the commonest diseases seen in sanatorium practice is mucomembranous enterocolitis. Since this affection is three times more frequent in women than in men, I will describe the patient and the disease as I have seen them in women. While the bodily habit of the patient may be the obese-anemic, the lank type is the class in which mucomembranous enterocolitis is oftenest found. The expression of the face is a cross between the peritoneal and the uterine, while the color is midway between cancer and tuberculosis. If given to making a snap diagnosis, the disease might be guessed from the general make-up of the patient. It is equally true that a physician on the lookout for these cases may be the first to make the diagnosis, though the patient may have been through a dozen hands and had an abdominal section for some supposed tube-ovarian difficulty. In fact the woman who, with a sub-developed mucomembranous enterocolitis, escapes an abdominal section for supposed utero-ovarian diseases may consider herself a lucky individual. The surgery that is helpful in these cases is an operation for piles and an abdominal section for ptosis of the abdominal organs, especially a section above the umbilicus through which the stomach is replaced and tacked to the abdominal wall, bringing the transverse colon up into place with it.

*Read before the Humboldt County Medical Society.